THE VETERINARY RECORD

A Weekly Journal for the Profession.

Edited by WILLIAM HUNTING, F.R.C.V.S.

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THE COUNCIL OF THE N.V.A.

The recently published proceedings of the National Veterinary Association contains a most annoying error for which the General Secretary desires to apologise.

On page 13 of the publication is a list of the gentlemen elected to form the Council for the current year. The names are those of gentlemen mentioned at the Windermere meeting and who would have been chosen had not the Irish Veterinary Societies made a suggestion of their own. It was felt that the local knowledge was greater than that possessed by the members in attendance, and so it was decided to accept the list suggested.

Unfortunately the printers copied the wrong list and the Secretary failed to note the error when reading the proofs.

Any member of the Association will be supplied with a correct printed paragraph which can be gummed over the passage on page 13 of the report, on applying to the General Secretary.

The list of Vice-presidents is correct—they were named and elected as reported.

VETERINARY INSPECTION AT SHOWS.

The North British Agriculturist has an article on this subject in its current number. At a recent meeting of the Council of the Shire Horse Society it was suggested that the Board of Agriculture should take in hand the inspecting of entire horses and grant certificates of soundness. Sir Walter Gilbey asked if they had considered the difficulties that would arise through the differing of veterinary experts. Sir P. A. Muntz asked how it would look if a horse which was certified sound at the Shire Horse Show were to be cast as unsound by the veterinary inspector of the district in which he was travelling. The Editor comments—that although these two questions gave the happy dispatch to the scheme of Government inspection they raised another pertinent question, viz., do they not equally condemn the action of those societies that only give prizes to horses passed sound at the hands of their own veterinary inspectors?

We think there is a considerable difference. The suggested action of the Board of Agriculture would put a stop to the use of stallions considered unsound by their inspectors. The custom at English shows only deprives of a prize given under known conditions, and leaves the owner free to exhibit at other shows.

Difference of opinion among all sorts of experts is inevitable.

GLANDERS.

The following correspondence is taken from the report in *The Live Stock Journal* of the last meeting of the Council of the R.A.S. It marks progress and is remarkable for the insincere and incorrect reply of the Secretary. To suggest that glanders is not increasing in prevalence is simply indescribable.

A letters dated August 11th, 1903, had been received from the Board of Agriculture in reply to the resolution on glanders in horses which was passed by the Council on July 29th, 1903, and the Committee recommended the publication of the correspondence as follows :—

Royal Agricultural Society of England,
13, Hanover Square, London, W.,
August 1st., 1903.

Sir,

The Council of this Society have lately had under consideration the administrative measures adopted in connection with glanders, as they view with concern the increase in the number of outbreaks of that disease reported under the Diseases of Animals Acts during the last few years, as shown by the Official returns published by the Board of Agriculture.

At the meeting of the Council held on Wednesday last, a resolution was passed urging the importance of effect being given to the recommendations (Nos. 1-9) printed on pages x. xi. of the report, presented on June 2nd, 1899, to the Board of Agriculture by their Departmental Committee on glanders.

The Council attach especial importance to those recommendations of the Departmental Committee while relate to measures for dealing with horses known to have been exposed to contagion, and to the granting of more liberal compensation for animals slaughtered solely on account of reaction to the mallein test; and they trust that the Board of Agriculture may see their way to give speedy effect to the recommendations of the Departmental Committee appointed by them.

I am, Sir,
Your obedient Servant,
(Signed) ERNEST CLARKE,
Secretary.

The Secretary,
Board of Agriculture.

[REPLY.]

Board of Agriculture,
4, Whitehall Place,
London, S.W.,
August 10th, 1903.

No. 8989-1903.

Sir,

I have laid before the Board of Agriculture your letter of the 1st inst., and I am to say that there has recently been some increase in the number of cases of glanders reported, 795 outbreaks having occurred in the first twenty-nine weeks of the present year as compared with 641 in the corresponding period of 1902, the disease is one which has always been subject to considerable fluctuations, and it was not more prevalent last year than

it has been on several occasions since it was first scheduled in 1877.

The Board are anxious, however, to take any steps in their power which may effect a reduction in the number of outbreaks of a disease which is dangerous to man as well as to the animals, and they are now in communication with the local authorities principally concerned with a view to ascertain to what extent it is practicable to give effect to the recommendations of the Departmental Committee which reported on the subject in June, 1899. In the meantime the Board take note of the views expressed by your Council as to the necessity of speedy action being taken in the matter.

I may add that on receipt of the Report of the Committee above referred to, the Board at once made arrangements with the Treasury for the institution of the further scientific investigations which the Committee recommended should be undertaken with regard to the communicability of the disease and the effects of the application of mallein. The report of these investigations has only recently been received.

I am, Sir,
Your obedient Servant,
(Signed) T. H. ELLIOTT.
Secretary.

The Secretary,
Royal Agricultural Society of England.

THE ROYAL VETERINARY COLLEGE.

At the recent meeting of the Council of the R.A.S. the Veterinary Committee had two important subjects to consider—the connection of the R.V.C. with the University of London, and the annual grant to the College. Both subjects are referred to below.

A letter dated October 22nd, 1903, had been received from the Principal of the University of London, stating that the Council's resolution in favour of the institution of a special degree in veterinary science had been referred to a Special Committee of the Senate for consideration and report, and inquiring whether the Council would be willing to nominate some person to join the Committee. The Veterinary Committee recommend that an affirmative reply be sent to this communication, and that Lord Moreton (Chairman of the Education Committee) be nominated to represent this Society upon the Special Committee. The Committee recommended that horse-shoeing competitions be held in connection with the Show of 1904, under the same regulations as for the Show of 1903. A discussion having arisen on the question of the renewal of the grant of £500, which since 1890 had been made annually by the Society to the Royal Veterinary College for the purposes of research in comparative pathology and bacteriology, the Committee decided to asked their Chairman to give notice that at the next meeting of the Council he would move for a grant of £250 for the year 1904, £200 of this sum to be allocated to the Royal Veterinary College, and £50 reserved for general purposes.

The Hon. CECIL PARKER, in moving the adoption of this Report, said he should like all the Council to know that it was owing to the state of the Society's finances that it was not proposed to ask the Council for the full sum of £500, which had been granted to the Royal Veterinary College since 1890 for the purposes of research in comparative pathology and bacteriology. At the same time, owing to the Society's long association with the College, lasting since 1839, it would not be the wish of the Council that that association should be severed, and he therefore now asked for half the amount of the usual grant, viz., £250, of which £200 would be for the Veterinary College, and £50 reserved for general purposes.—*Live Stock Journal.*

STAMPING-OUT SHEEP SCAB.

This question is now becoming prominent, and sheep-owners are beginning to recognise that the constant annual worry and loss is preventable. They are even prepared to put up with some trouble if they can be assured of success following the application of stringent regulation.

At a recent meeting of The National Sheep Breeders' Association a letter was read from the Chief Inspector of Tasmania. It shows that the disease was stamped out there in eight years, and it shows that the writer, if not modest, is very illogical. He seems to imagine that because "lay inspectors" were entrusted with the supervision of the law, that the success was due to those inspectors having no veterinary knowledge We would suggest to him that a scientific training is not incompatible with practical knowledge or with the possession of common sense. It is just possible that the stringent regulations may have had something to do with the success, and that if such harsh restrictions had been enforced by lay inspectors more ignorant than Mr. Tabart the result would have been the same.

We believe that compulsory dipping is necessary here to success, but our authorities are weak and timid—afraid to advise thorough measures and willing to magnify little difficulties. Even with less Draconic laws than those of Tasmania it would not be difficult to eradicate sheep-scab from Great Britain. Here is the precious letter which we copy from *The Live Stock Journal.* We publish it for its facts, not for its composition or inferences.

"Department of Agriculture, Tasmania.
Hobart, April 20, 1903.

Sir,—Observing that the matter of scab in sheep was debated at your annual meeting held at Carlisle on July 5th, 1902, and that a concise account showing that Tasmania with stringent legislation in eight years eradicated scab from this State might afford some practical information, I shall esteem it an honour if, after perusal, you consider my observations worthy of a place in your records; with that object in view I have prepared this short *resumé* of our past conditions as relating to sheep scab.

"The Act for the Prevention of the Disease in Sheep called Scab" was successfully passed through Parliament by and under the auspices of the late Honourable James Whyte, and became law in Tasmania in 1870.

The Act provided for the raising of funds to pay Inspectors who were to be appointed.

The Colony was divided into clean and unclean districts. It provided for the branding of all sheep over the age of six months (as a matter of identification of ownership). It provided for the construction of quarantine paddocks, also the erection of public dips at recommended places. It provided that if the owner of sheep did not hold a clean certificate for his sheep, they were deemed to be infected with scab.

Licenses were issued to cleanse infected sheep extending for three months, during which period sheep could not be moved; if the licence had to be renewed, sixpence per head was charged for a further three months. This could then be renewed; if not cleaned for a further three months, sixpence per head was again charged; then if further failure took place the Inspector could place a person in charge of the infected sheep and cleanse them for the owner.

All sheep in infected districts or upon infected runs were compelled to be dipped from off the shearing board under a penalty of £25.

Store sheep not within a clean district at public sales could be ordered to be dipped by the Inspector; his refusal to dip made the owner liable to a fine of not less than £25 nor more than £100.

No infected sheep could be moved; persons concealing scabby sheep were fined from £10 to £200; shepherds were also liable.

If infected sheep were found in neighbours' sheep or upon their property, they were destroyed by the Inspector.

Travelling infected sheep was not permitted; anyone wilfully abandoning sheep were prosecuted, and the landowner, Inspector, or police officer could destroy such sheep.

Owners who refused to erect dips were liable to a penalty of £50. Anyone causing disease to be communicated was guilty of misdemeanour, and was liable to imprisonment for not exceeding three years.

The above are the principal clauses under which the sheep in Tasmania were freed from sheep scab.

I am perfectly certain that if those in authority in England who control stock matters were to adopt regulations dealing with the eradication of scab, that a maximum time limit of two years from the enforcement of stringent laws would see England free from the disease.

The most important factor to the eradication of scab is the appointment of practical inspectors. I would desire to point out, without egotism, but for your advantage, that the Australian States with the Colony of New Zealand are the only parts of the world from which scab has been eradicated, and was brought about by the appointment of practical lay-inspectors. And it is a significant fact in countries where veterinary inspectors are in the service, scab is still in evidence, pointing to the fact that they are not able, nor have the knowledge, of how to deal with stock in numbers.

Tasmania's record is unique, the Scab Act, although commencing its operations in 1870 under the guidance of the late Honourable James Whyte, who wisely gave his inspectors a free hand to complete their work quickly and expeditiously. The staff, with considerable tact and knowledge of the tough work to be performed, one and all worked as a compact body and had the proud satisfaction to know that in 1878 scab was eradicated from Tasmania; but, to be absolutely certain that no stray scabby sheep were overlooked in the musters within rough country, and to provide against such a contingency. Tasmania was not declared clean and free from sheep scab until March 18th, 1881. Twenty-two years have now elapsed, and the State enjoys the uninterrupted reputation of having eradicated scab, and by its quarantine regulation prevented its introduction.—I have the honour to be, sir, your obedient servant,

THOMAS A. TABART,
Secretary and Chief Inspector

Mr. GEO. E. NASH, of Richmond, Yorks, the Mayor-elect, is the son of a well-known Manchester banker—the late Mr. Thos. Nash, and is a Conservative. He was born in 1855, and was educated at Ashworth Friends' School and the Manchester Grammar School. He entered the Richmond Council in 1893, and served nine years continuously, when he retired. Mr. Nash is a veterinary surgeon, and succeeded the late Mr. John Hedley in Victoria-place, and there was no more popular man in Richmond. At the recent municipal election Mr. Nash was returned at the head of the poll, and received a cheery greeting.—*Darlington and Stockton Times.*

A correspondent adds:—"Mr. Nash has been a Justice of the Peace for a number of years, and we are all pleased at the new honour conferred on him."

SURGICAL AND CLINICAL NOTES*

By Vet.-Capt. F. S. H. BALDREY,
Punjab Veterinary College, Lahore.

Case IV.—Chestnut Waler mare, aged

May 23rd.—Admitted for abscess on the wither, result of a bruise from lady's saddle. Has predisposition in the fact of a very high bony wither.

Diagnois.—Simple abscess. *Prognosis* favourable.

Treatment.—Opened; aseptic dressings, laxative diet, exercise.

June 10th.—Not healing, excessive granulations and an icterous, unhealthy discharge, lymphatics enlarged and indications of pus collecting.

Treatment.—Explore sinus, injection of 5 per cent. solution of Acid carb.

June 12th.—Slight but immaterial improvement; ordered operation.

June 16th.—Cast, chloroformed. Exploration discovered sinus extending downwards into trapezius muscle. Made free incision and inserted seton to ensure free drainage. Supra-spinous ligament gangrenous in places, and of the consistency of chamois leather; this was freely scraped and all unhealthy portions removed. Hæmorrhage stopped by forceps and tying. The whole wound thoroughly douched with Hg. Cl_2 solution and plugged with aseptic gauze. This animal was severely affected by the chloroform and the very hot weather, and was very dull for several days. (*vide Case II.*)

Case progressed without further noticeable incident, but took a long time to heal and was not discharged until the beginning of August.

Case V.—Bay C. B. gelding, aged.

June 16th.—Fistula left lower jaw.

History.—Owner did not know how long it had been there, appeared to be about four months. Large sinus opening on under surface of ramus and extending upwards directly to root of third molar. Crown of tooth appeared healthy, but disease of root and alveolus diagnosed. Ordered for operation next day.

June 17th—Cast and chloroformed. Tooth was immovable with forceps, at least it would have been impossible to remove it by this means without breaking the tooth and injuring the jaw. I therefore proceeded to trephine. An incision 3 inches long was made through the opening of the sinus and as much as possible of the thickened inflammatory exudate removed. I then trephined directly upon the root of the third molar and removed a fair-sized piece of bone and exposed the root of the tooth. The molar was punched out without any great difficulty. The free cavity of the alveolus well syringed out with boric lotion, the cavity thoroughly scraped, again douched and then plugged with aseptic wool. External opening dressed and bandaged.

June 22nd.—Dressing removed. Wound progressing favourably and rapidly healing up. The

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*Appeared originally in Urdu in *The Indian Veterinary Record*, edited by Major Pease.

horse then attended the College as an out-patient, was in regular work and recovered without any complications.

Case VI.—Grey C.B. mare, aged, with four-months-old foal at foot.

June 18th.—Mare and foal have been treated irregularly as out-patients for catarrh and strangles respectively. The former slight, the latter severe. On admittance to-day the mare was found to be suffering from what the hospital surgeon thought was severe urticaria, the swellings varying in size from a cocoanut to an orange. Considerable œdema of chest, legs and abdomen. Animal very depressed, temperature 104°. On seeing the case with Major Pease, we concluded that the mare was suffering from purpura. The eye and nasal mucous membranes showed very slight petechiæ. The swellings were not the clearly defined variety, usually associated with purpura, they did not pit on pressure, or only very slightly, and the leg swellings were hardly appreciable in size.

Prognosis.—Unfavourable.

Treatment.—Turpentine, acid. carb. and liq. ferri perchlor. prescribed, together with pot. chlor. in drinking water. Generous diet. The foal not allowed to suck. (This is the third case of purpura of a similar nature admitted lately, following on mild catarrh. It is probably due to the enervating effect of the excessive heat and great amount of moisture in the atmosphere, producing almost total prostration in both animals and men).

June 19th.—Animal progressing fairly well, pulse very weak. Gave stimulants and tr. digitalis.

June 20th.—Head suddenly swollen to such a degree as to render respiration almost impossible, performed tracheotomy in the evening. Head sponged with acidulated cold water frequently. Continued treatment otherwise.

June 21st.—Slight improvement, treatment continued, prognosis unfavourable. To quote a respected Professor of my student days, the case continued "with remissions and exacerbations" for another two days when improvement gradually became apparent. The treatment being turpentine with mineral tonics, carbolic acid, etc. etc. as indicated.

The case is interesting from the number of complications arising, the unusual character of the swellings, and the fact that the foal was none the worse, as although it was fed artificially on cow's milk etc. it was allowed to stay with the mare and recovered entirely from its strangles.

July 6th.—Mare discharged cured.

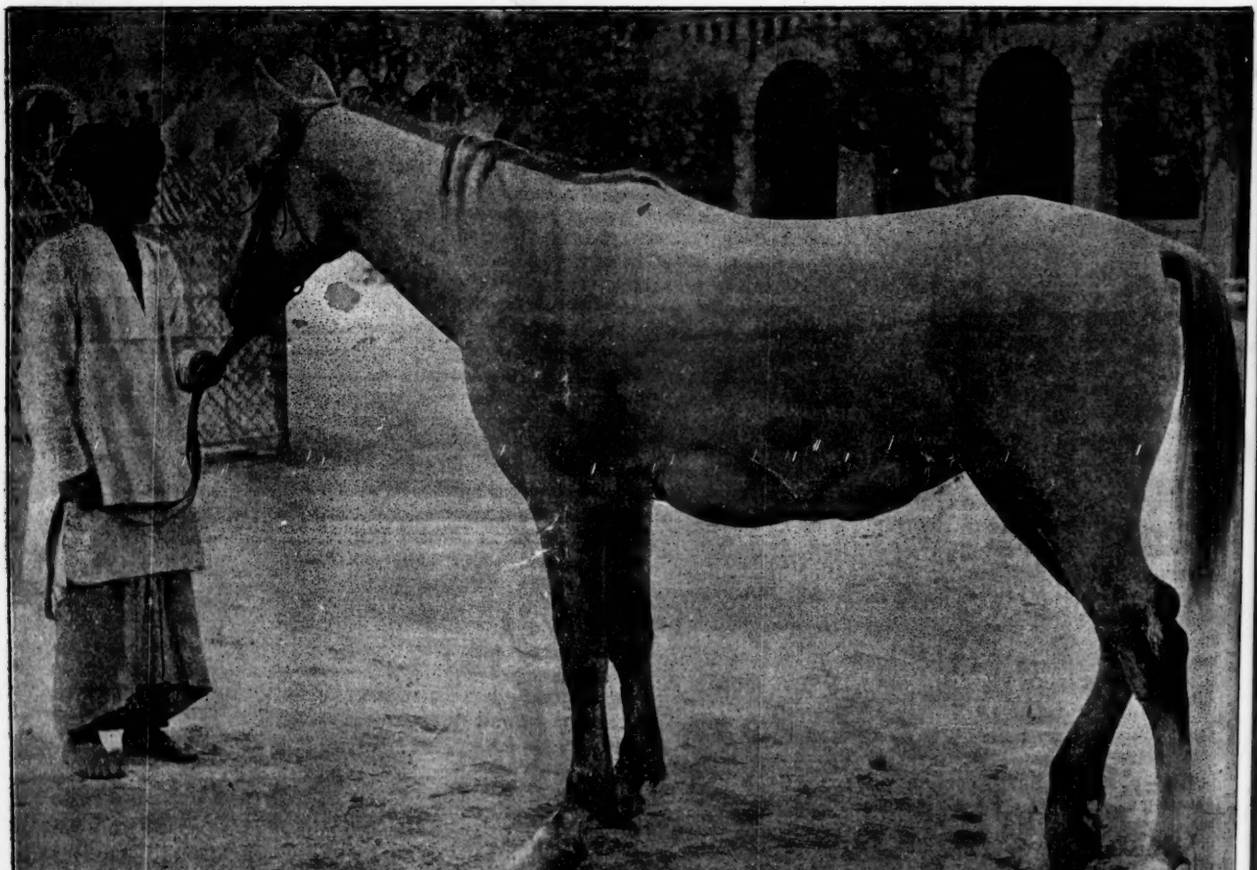

Photo of mare in the initial stage of Purpura Hæmorrhagica. Note the unusual character of swelling. Vide case VI.

COCAINE AND MORPHIA IN THE DIAGNOSIS OF OBSCURE LAMENESS.

By Wm. Pauer, M.R.C.V.S., Blackwater, Hants.

Most practitioners will, I think, admit that it is not an unusual thing to meet with cases of lameness in which diagnosis is of extreme difficulty. There are certain cases in which the limb presents no abnormality, with no apparent increase or decrease of heat in any part, and no resting or easing recognised as indicative of any special form of lameness. In such cases, when the lameness is slight, the seat cannot be located with any certainty, though I am aware that there are those who are satisfied with their diagnosis from the action of the limb. When lameness is more acute, diagnosis from the action is considerably simplified; and in the foreleg, cases of shoulder, knee, and foot lameness may be distinguished; but granted this, I cannot believe that distinction can be made between splint, fetlock and foot cases.

In these instances, diagnosis can be confirmed or otherwise by the hypodermic injection of an anæsthetic over the course of the plantar or other nerve. The operation is extremely simple, takes very little time and is very effectual. No bad results follow if ordinary antiseptic precautions are taken, and no swelling over the seat of injection should remain. It is most reassuring for a practitioner to have his opinion confirmed in this way, especially when the client has his own ideas on the subject. Unfortunately in the majority of cases clients expect a diagnosis to be given offhand and the V.S. who hesitates in his opinion is frequently regarded as incompetent. Possibly, this is the real reason why the method has not been more extensively adopted in this country.

The following are cases in point:—

I. Black hunter gelding, five years old. Had been hunted during the whole of last season and was seldom free from lameness, sometimes one fore leg, sometimes the other. The only unsoundness I could detect was a number of extremely minute splints, which could only be felt when the knee was flexed. My diagnosis was periostitis, and my convictions were more confirmed on finding, when he came up from grass, several of the splints had increased in size. Ungt. hydrarg. biniod. had been applied several times, but the lameness was persistent and not improved with rest. Another professional opinion, which I highly respect, was obtained and his verdict was "Feet." As opinions differed, I decided to inject him with a mixture of cocaine and morphia (as per extract from *Journal Méd. Vét.* in *The Veterinary Record*, Dec. 7th, 1901) at the first favourable opportunity. At 11 a.m. on Nov. 2nd he *walked* lame on the off fore leg. At 3 p.m. on the same day he was in a similar condition. At this time I injected him over the course of both plantar nerves above the fetlock. At 3.30 there was no improvement, though I proved by pricking the coronet that it was devoid of all sensation, whilst the near coronet was highly sensitive. The next morning he was still quite as lame and at 12 p.m. I injected the mixture into the inner side of the arm at the point where the median nerve divides to form the plantars. At 12.30 he walked and trotted free from lameness, thus confirming my diagnosis and placing the matter beyond doubt in the eyes of the owner.

The effects of the injection passed off in a couple of hours time, when the lameness returned as badly as ever.

II. Bay harness mare, seven years old. For some months past had been going slightly lame on starting on the near fore leg and then trotted sound the rest of the journey The only unsoundness to be seen was a splint under knee. From the presence of heat, slight pointing in the stable and manner of going, I regarded it as a case of foot lameness, probably navicular. The owner was inclined to think that the splint was the cause of the mischief. Mare was injected at point of operation for lower neurectomy and in half an hour's time the lameness had disappeared. The coronet was quite insensitive to the prick of a pin.

The components of the injection used in these cases were:—Sol. Hydrochlor of Cocaine (Willows & Co., 1 gr. in 10 m.) 25 minims. Sol. Hydrochlor. of Morphia (Willows & Co., 1 gr. in 10 m.) 20 minims, and sterilised water 30 minims.

The precautions taken were to thoroughly wash the seat of injection with Creolin and water after clipping. Sterilisation of syringe and needles and the application of antiseptic lint after operating. While injecting the needle was rotated in order to well diffuse the anæsthetic.

ON CERTAIN SEPTICÆMIAS AND SOME OTHER INFECTIONS OF YOUNG ANIMALS*

By Principal A. E. Mettam, B.Sc., M.R.C.V.S.

For many years, in different parts of the world, raisers of stock have had to contend with losses of young animals which die a short time—a few days or weeks—after birth.

Deaths in young stock may be attributed to a variety of causes, but there is one cause now almost universally recognised and which is included under the general name of septicæmia. That septicæmia, a very elastic term in this connection, is indicated on post-mortem examination most people who have had opportunities of a large number of post-mortem examinations will readily allow, but the question arises, what is the cause of the septicæmia, is there more than one cause and how does infection occur? Then, again, do all animals that are infected die? or does the primary infection at times pass away leaving the body deprived of its protection, open to the inroads of numerous saprophytes and parasites which otherwise would remain outside the body and harmless? Does the entrance of these organisms lead to serious lesions and perchance death, a secondary lesion, or may be lesions, developing as the result of their entrance into the body? I think it well, though it may appear to extend beyond the presumed scope of the paper as indicated by the original title, to consider these secondary lesions, as I hold that their value and importance is not inferior to the true cases of septicæmia which are more or less rapidly fatal.

* Paper read at the meeting of the N.V.A. held at Windermere, on Sept. 10th.

But first, what is septicæmia? I consider septicæmia may be due to the presence and development of an organism in the body, it may be due to a toxin, or it may be due to both combined.

In a great number of septicæmias the causal agent may be more or less readily found in the blood, in other fluids or in organs, and inoculation of a minute quantity of material taken from such a case is capable of producing the same disease in suitable animals. To make my point clear, I consider anthrax in this sense a septicæmia.

In a second class we have an intoxication; the affected animal being poisoned by the toxin poured into the body. In this case inoculation of the fluids or juices of the body will not produce the original disease in animals of the same weight and size as the primarily affected animal, the amount of toxin in the fluid used for injection is too small and will only produce any reaction in the smallest experimental animals where the dose of injection is relatively high when compared to the weight of the experimental animal. In this latter case there is no new formation of virulent material in the experimental animal such as in the first case, where the virulent material is capable of rapidly proliferating and giving rise to an immense new crop of virulent organisms. It is possible in this second form of septicæmia to produce an infection by injection of toxin produced by micro-organisms that have never been in the animal body.

If these two types of septicæmia are admitted then the third is not improbable—a few micro-organisms producing a virulent toxin capable of producing death, an extension of the process to the body which occurs frequently enough in different, it may be isolated organs of the body.

It is perhaps to septicæmia of the first type—septic infection—that we must look as the chief form of septicæmia in young animals. Septic infection occurs through a wound either of skin or of mucous membrane, through any portal that will allow of the entrance of a micro-organism. But can infection occur through an uninjured membrane where there is no solution of continuity? This is not so certain, though many experiments, feeding experiments particularly, seem to show that ingestion of virulent material may set up disease through the alimentary tract. Swine fever, tubercle, anthrax, possibly black-quarter, may be cited. It is difficult to assert that there is no wound of such a membrane as that lining the alimentary tract, because it may be microscopic, merely a denudation of a few epithelial cells, and yet be sufficient to admit the organisms to the body. It is probable that where animal parasites are present in the gut the condition of the mucous membrane is rendered favourable to the entrance of organisms. Young animals, a few days old, however, are not commonly the hosts of intestinal animal parasites.

The skin when intact offers practically an insuperable barrier to the passage of organisms, though the rubbing in of a pure culture of the staphyloccus pyogenes aureus gave rise to a crop of abscesses upon the apparently intact skin of the experimenter. The application, if violent, may have produced a wound, but in this case the cocci are said to have been arrested in the hair follicles and glands of the skin. Even if this is the case they were still outside the body, but it is probable that the toxin associated with them may have killed the epithelial cells, allowed the entrance of the organisms, and as a consequence the formation of an abscess. In most cases, however, I think we may consider that our septicæmias are not due to entrance of organisms through an intact epidermis, but that in most, if not in all, there is a wound. In the newly-born there is such a wound, the umbilicus, and the position of the wound is favourable to soiling—to infection. As a rule young animals are born where hygienic surroundings are altogether absent. Frequently enough they are born on a floor soiled by excretions, and their very helplessness favours the infection by the vain attempts to rise made by the newly born. Until quite recently no attempts were made to cleanse the umbilical cord nor to seal the umbilical wound, and that infection does occur through the wound and cord may be readily demonstrated in cases of omphalo-phlebitis, the umbilical vein being distended with pus carrying an immense variety of micro-organisms. The presence of pus in this vein and nowhere else discoverable in the body shows it is the primary centre.

I think therefore we are justified in concluding that septic infection occurs through a wound; that the wound may be in the mucous membrane of the intestines, or in the skin, or on the superficies of the body; and that most probably the umbilical wound is the main port of entrance, In some cases the above remarks apparently do not apply, as in septic pleuro-pneumonia in calves, a disease said to be contagious, but we shall refer to this again.

Of recent years the different forms of septicæmia, those grouped in the class of septicæmia hæmorrhagica, have multiplied or possibly, owing to better technique and advance of science generally, observers have recognised maladies which previously were passed over or included under other forms, and hence it is difficult in a paper such as this to mention all the types recognised by authors. I hope, however, to touch upon the most important and better established.

White Scour in Calves.

A disease very prevalent in the south-western parts of Ireland and investigated in 1901 by Prof. Nocard and myself. The mortality from this disease was very serious, indeed many farmers were practically unable to rear any of their calves and the yearly loss to the country became appalling. It has probably been prevalent for many years on isolated farms, but recently, in the decade 1890—1900, it became a veritable scourge. The disease manifests itself by diarrhœa which usually appears on the second or third day following birth; rarely it makes its appearance on the first day, sometimes as late as the sixth; the farmer, if the calf shows no signs after the eighth day, thinks his calf will escape. The discharges from the bowels are thin, yellowish-white, frothy and stinking. There is considerable tenesmus. The diarrhœa and straining soon render the animal so weak as to be unable to stand, and it lies constantly, soiled with its own dejections, moaning and grinding its teeth. Frequently there is a thin muco-purulent discharge from the nose which the calf makes no effort to clear away. The diarrhœa continuing becomes streaked with blood and bloody, the eyes sink in the head, the animal lies continually groaning all the time. It refuses its food. It coughs, and sooner or later dies—a miserable object indeed. The temperature, at first high, may remain normal or about normal for some little time, to fall and become markedly subnormal. I have observed a temperature as low as 92° F. just prior to death.

In some cases of acute white scour there is an intense arthritis of one or more joints. The joints particularly involved are the elbow, knee, stifle, and hock. The joint is hot and swollen and no weight is put upon the limb at all, the animal persistently lying, or when up, standing with the limb flexed. Sometimes the limb between the joints, stifle and hock, is also involved as well as the two joints. The muscles, intermuscular fascia, and fasciæ of the leg generally are infiltrated with a yellowish serum which gives rise to the swelling.

Post-mortem Examination.—The umbilical cord is thickened, soddened with a blood-stained fluid. The umbilical vessels are thrombosed, swollen, with the thrombus breaking down. The peritoneum joining the arteries is puce colour. Numerous petechiæ and ecchymoses found upon the peritoneum, especially on the

serous covering of the stomachs. The liver is swollen but shows no gross lesions, microscopically there are minute areas of necrosis. The lymphatic glands are swollen, juicy, sometimes hæmorrhagic. The kidneys often congested, sometimes showing catarrhal nephritis. The urinary bladder contains a highly albuminous urine and the mucous membrane is very vascular, swollen and ecchymosed. In later cases there is a fibrinous peritonitis. The mucous membrane lining the first three compartments of the stomach is often diffusely hæmorrhagic; in the abomasum minute capillary punctiform hæmorrhages are common, the appearance on the washed mucous membrane is like a sprinkling of coffee grounds. The small intestines are congested and the lymphoid tissue is infiltrated with blood and often breaking down. This condition is sometimes well seen in the large intestine and especially when the fæces are blood-stained.

In the chest the pleura shows petechiæ and ecchymoses; the lungs areas of collapse, often small lesions of a hæmorrhagic pneumonia. The epicardium and the endocardium show beneath them minute hæmorrhagic extravasations. Similarly minute hæmorrhages into the substance of the valves may be found.

The lesions in acute cases are distinctly those of septicæmia. The sequelæ observed in animals that have recovered from an acute infection—white scour, are lung lesions, pyæmia, and necrosis.

The cause of the infection as demonstrated by Nocard in Ireland and by Lesage and Delmer in France, by Lignières in France and the Argentine, is an organism which belongs to the same family as that causing fowl cholera. This family is notorious for the septicæmic lesions produced and is classified as that giving rise to septicæmia hæmorrhagica. Lignières has proposed the name *Pasteurella* for the group, and names the diseases *Pasteurelloses*. As showing the importance of these micro-organisms we may mention in passing that one or other of the family is the causal agent of fowl cholera, some forms of swine fever, septicæmia of sheep, the disease of wild or semi-domesticated ruminants (*wild seuche* and *rinderseuche*), *barbon des buffles*, various forms of so-called influenza of the horse, and distemper in the dog. "The organism is a cocco bacillus, non-motile, not taking Gram, polymorphous, not liquefying gelatine, not coagulating milk, which remains normal, does not grow on normal acid potato, does not produce indol in pancreatic bouillon, does not form acid, ærobic, but may be grown as an anærobe, produces an odour *sui generis*. No spores, no cilia. Of variable virulence, usually, however, it is high. When injected into the blood stream, the organisms show a predeliction for serous and synovial membranes."*

The organism of white scour, according to Lesage and Delmer, may be found with many others in the intestinal discharges of suffering calves, and they say also in the bronchial mucus. Feeding experiments to healthy calves have failed to give the disease (Nocard, Lesage, and Delmer). Intravenous injection of a culture of the organism will kill a calf within 30 hours, and an adult cow which received 5 c.c. of a culture died in 26 hours with most pronounced lesions of septicæmia. Application of a culture to the navel, either by rubbing on the culture or by tieing on a pad of cotton wool soaked with culture, produced the disease (Moussu). Subcutaneous injections of the culture were not so successful. It appears, therefore, that entrance into the blood stream of the organism is essential to produce white scour, and that the port of entry in practice is the umbilical wound.

Thommasen has also described a septicæmia in calves associated with nephritis and urocystitis.† The disease affected calves in the neighbourhood of Utrecht and proved to be very fatal. As the symptoms and lesions are different from those mentioned as observed in white scour it may be as well to cull largely from the original paper and give them in some detail.

Symptoms.—The first symptoms are observed, not soon after birth, but towards the fifth to eighth day and even as late as four or five weeks. The animals have lost their spirits and lie constantly either stretched out on the ground or with head turned back on the thoracic wall. Made to get up *they stretch themselves and bend downwards* (not arch upwards) *the back and loins*. (Particular stress is laid upon the symptom italicised.) The muzzle is dry and the respirations hurried. Pulse 100 to 150. The temperature is 104° F and even higher. Sometimes there is a dry cough. Though the appetite is not good still the animal will take milk. Generally the droppings are normal in colour and consistence, they may be streaked with blood; diarrhœa has been noticed but nothing approaching dysentery. The urine was often passed in small quantities, it was clouded, but red blood corpuscles were not at first suspected. Boiling with potash lye, however, gave a red colouration. It contained a large quantity of albumen, epithelial casts and micro-organisms. The thoracic organs were sound. In some patients there were cerebral symptoms (somewhat similar symptoms were observed in calves suffering and dying from white scour. Toxæmia ?).

The disease lasts some five or six days generally and terminates fatally.

Lesions.—The lungs were found collapsed, the pleuræ were sound. No inflammation of the lungs. The blood in the heart was not coagulated, numerous ecchymoses upon endocardium and especially involving the valves. The bronchial lymphatic glands were swollen, softened and showed capillary hæmorrhages. From the peritoneal cavity a clear fluid escaped on opening the abdomen and the serous covering of the gut showed hæmorrhagic areas. The spleen was very much enlarged, even five or six times greater than normal; the capsule tense, violet and glistening. The organ was soft; filled with blood.

There was, in all animals, a hæmorrhagic parenchymatous nephritis. The kidney on section was red, sometimes the redness being confined to the medulla of the organ. The urinary bladder contained a highly albuminous urine with casts and epithelial cells and organisms. The mucous membrane was brownish red in colour, uniformly or in streaks or patches. The ureters were also coloured.

The mucous membrane of the abomasum and small intestine showed ecchymoses, and the patches of lymphoid tissue were often swollen. The liver showed nothing pathognomonic. A slight meningitis with effusion was found in those cases where brain symptoms had been shown.

Thomassen shows that this septicæmia is different from that described by Jensen or Poels, and that it was not the septic pleuro-pneumonia of calves was evident, as the lungs and pleuræ were free from lesions.

It is also different from the malady we recognise as white scour, not only as to period of incidence of the disease, but also as to symptoms and lesions. Thomassen shows that this form described by him is due to an organism not taking Gram. It is allied to the colon bacillus (*B. coli communis*). It grows readily upon the usual media. Does not liquefy gelatine. It grows upon potato—which separates it from the class of organisms of which that causing white scour is a member; the culture, however, is an invisible one, which differentiates it from the colon bacillus and allies it with the organism causing typhoid fever of man. It is a motile organism.

* Contribution à l'Etude et à la classification des Septicémies Hemorragiques, par J. Lignières, Buenos Aires, 1900.

† Annales de l'Institut Pasteur, Tome onzième, 1897. Page 523.

I have merely mentioned these particulars to show that Thomassen's organism is not that causing white scour. Further, it is more highly pathogenic than the usual coli organisms. Injected into calves it produced death with all the symptoms and lesions of the original disease in the experimental calves. The organism is not pathogenic for the dog or horse.

Attempts at treatment failed. Carbolic acid in 2 per cent. solution was injected subcutaneously. Eucalyptol in olive oil was employed in like manner without result. Spirits of camphor *per os*, preparations of iodine injected into the veins, were all equally useless.

Another comparatively common septicæmia of calves is that known as septic pleuro-pneumonia, a disease first recognised in Holland, then in Belgium, Denmark, Prussia, France, Italy and Russia. The organism found in animals dead or killed when suffering from the disease is similar in appearance, tinctorial behaviour, and in culture media to others of the septicæmic group. It affects calves, pigs, and kids. The symptoms of serious ill health are pronounced, and often the subject dies in a few hours after it is noticed to be ill. The young animals rapidly become weak, are unable to rise, refuse to suck or take food. In this malady the skeletal muscles are affected. The limbs become stiff, those in front are bowed, the hind limbs thrust far under the trunk. The animal moves with difficulty and is evidently in great pain. Lung symptoms make their appearance, as noted by the respirations and cough and by the soreness of the chest to palpation and manipulation generally. Auscultation shows dullness, râles, and tubular breathing. A fœtid diarrhœa then sets in. Sweating, congestion of the visible membranes, frothing at the mouth are also noticed. In young pigs the symptoms are allied to those of swine fever.

Lesions.—The lesions in the acute forms are found in the thoracic cavity. They are those of pleurisy—the effusion coagulating on exposure to the air, and ecchymoses are found. The lung is increased in size, hard and friable, and in appearance is likened to the lesions of contagious pleuro pneumonia. The heart muscle has a parboiled appearance, it is paler than normal and friable. Lesions are found also in the abdominal cavity but are less evident—petechiæ and ecchymoses upon serous and mucous membranes, and engorgement of the solid viscera with blood. The skeletal muscles also show small hæmorrhagic centres, scattered through the muscles, blackish or a black violet tint. These centres may be a state of degeneration. The muscles may be infiltrated with serum. The causal organisms may be demonstrated in the lesions.

It is believed that this disease is spread by infection and by contagion. Poels thinks the organism is a facultative parasite and that it is present in certain soils and upon forage, and that it obtains entrance into the body by the respiratory tract as well as by the alimentary route.

In the United States a form of septicæmia hæmorrhagica has been noticed which perhaps should be mentioned, because young animals die from it as well as older animals, indeed neither age, nor sex, nor condition is proof against it. The evolution is rapid, death may occur in six hours, generally in twenty-four hours, rarely the animal lingers three or four days. The symptoms are interesting. There is loss of spirits, suppression of milk, loss of appetite, difficulty of movement, lameness and pain when moving. The pain is sometimes acute, the animals cry out and there is contraction of the muscles. If the animal lives more than twenty-four hours there is rapid loss of condition. The temperature, at first high, rapidly falls. Œdematous swellings appear in various parts of the limbs, and throat especially. The fæces, streaked with blood, and black, become watery and hæmorrhagic. Sometimes hæmaturia and blood stained discharges are noticed. Lung lesions are not observed. [The symptoms are those of *Wild* and *Rinderseuche*, the clinical manifestations of which are little known.—*Leclainche.*] The lesions observed are those characteristic of septicæmia, blood extravasations of a varying degree being found upon the surface of membranes and in the interior of organs. The spleen is generally normal in appearance and consistence, as are the kidneys. In some cases the joint cavities contained a blood stained synovia.

Jensen, who published the result of an experimental enquiry into the cause of diarrhœa in calves* in 1894, came to the conclusion that diarrhœa in calves was the result of a gastro-enteritis complicated with septicæmia, and that it was due to a pathogenic variety of a normal inhabitant of the gut closely related to the *Bacterium coli commune*. His results were confirmed by others—Piana, Mazzanti and Nigezzi, Monti and Veratti, Piana and Galli-Valerio, and Romano, Italian workers. Nocard and Leclainche, however, are dubious as to the pathogenicity of the organism in question. It must be granted that the *Bacterium coli commune* can very frequently be found in the tissues prior to natural death, the invasion occurring when the animal is *in extremis*, and that its presence may be associated with the cause of the disease though in reality it had nothing to do with it; and on the other hand, the effects of the invasion of the *Bacterium coli commune* are so various that one need not be surprised that a variety of the organism may produce most fatal results. As regards Jensen's form of the disease it would perhaps be as well to keep an open mind, especially as his own results differ from those of workers who have recently investigated diarrhœa of calves.

Jensen's organism is motile, it produces gas in gelatine stab cultures, it coagulates milk, it grows upon potato, and the cultures have a fœtid odour, characteristics which at once differentiate it from the organism of white scour.

The symptoms of the natural disease are like those of white scour, though in some cases the discharges from the rectum were greenish or green. Often in these cases of Jensen the materials first passed by the newly-born calf were liquid.

The lesions noted are as follows† If the animal is opened immediately after death the intestine is anæmic in appearance, but later it becomes dark red. The mucous membrane of the abomasum and small intestine is infiltrated, congested, studded with ecchymoses and desquamated patches. Peyer's patches are enlarged, the colon and rectum contain gas and a greyish viscid material mixed with little yellowish grains. The rectum is thick, red, inflamed, as is also the skin around the anus. Mesenteric glands are swollen and contain hæmorrhagic centres. The spleen and *urinary bladder* are not altered (italics mine), the liver and kidneys are hyperæmic. The lungs are sound. Lesions of bronchopneumonia sometimes found are due to foreign bodies. The myocardium is intact, the endocardium is ecchymosed." The condition of the urinary bladder here should be compared with Thomassen's cases and with those seen in Ireland. The absence of lung lesions is significant. The lung lesions in the Irish calves were certainly not due to foreign bodies in the bronchi.

In this, as in all others, a knowledge of how the organism gets into the body of the calf is desirable. Jensen believes that the organism is always present in the alimentary canal of cows and that it is expelled along

* Ueber die Kalberruhr und deren Actiologie. *Monatschrift für Thierheilkunde, IV.*

† Nocard and Leclainche. Les Maladies Microbiennes des Animaux, 3rd Edition, 1903.

with the fæces, soiling the parts with which they come in contact. The udder is contaminated when the cow lies down, and the calf takes in a dose of the organisms when it sucks the teat. Poels believes on the other hand that the infection is produced by the umbilical wound being soiled with the organism, which is a particularly virulent type of the colon bacterium. The umbilicus is infected during parturition or afterwards; virulent organisms have been found in the vaginal mucus. Jensen obtained infection in seven calves by feeding them on milk mixed with intestinal discharges of animals suffering from the disease. These calves were two days old; older animals were not infected.

A particularly interesting experiment of Jensen's is worth mentioning. He gave newly-born calves such substances as creolin, pyoctanine or trichloride of iodine and saw them die within 48 hours with diarrhœa. The preparation given had injured the mucous membrane of the gut and allowed intestinal organisms to cross the otherwise efficient barrier and invade the body. These organisms recovered and grown in suitable media produced the disease when ingested by another calf.

It appears, then, that anything which will injure the natural defences of the body will allow of entrance of organisms which may produce death, and that these organisms are generally harmless when in the lumen of the bowel. This is probably the cause of death in many young animals—foals, calves, and lambs, which become the hosts of numerous animal parasites which wound the mucous membrane of the stomach and gut generally, and allow the access of micro-organisms which under ordinary conditions remain outside the body in the alimentary canal. A similar explanation may be given for death as the result of retention of fæces or obstruction of the bowel. It is not so much absorption of the contents of the bowel—auto-intoxication—as it is injury to the bowel wall, which is rendered permeable to members of the intestinal flora. There is also considerable evidence in support of the contention that secondary lesions to a septicæmia from which the animals recover are due to the entrance into body of organisms which are normal inhabitants of the intestine, and which under ordinary circumstances thrive there without doing harm to the host. Indeed it is probable that many members of the intestinal flora are absolutely essential to thorough and efficient digestion in the intestinal tube and to the normal development of the host, as witness Nuttall's experiments upon guinea-pigs fed upon bacteria free food and kept in aseptic compartments, compared with others kept under ordinary conditions. Still, from the knowledge we have already gained as to the life-history of organisms we are driven to conclude that from some cause or condition or other, parasites or saprophytes which are ordinarily harmless may produce varieties which may give rise to serious lesions. The various coli-bacillary infections are examples of such. Perhaps better technique will demonstrate to us that what we now call varieties are quite distinct species.

Although it is somewhat beyond the scope of the original title of this paper I think it well that mention should be made of several lessions that may be found in young animals dying a short time—a few weeks, or may be two months or so, after birth. I mention these lesions because I am convinced that in many cases they arise as sequelæ to an antecedent septicæmic infection. Such secondary infections are the lung disease in calves, necrosis of the liver in calves and lambs, and pyæmia and pyæmic arthritis in calves, lambs and foals.

(To be continued.)

Where wiid rabbits are killed on a farm it is a good plan to examine their livers, in which the fluke parasite, if present, is easily discovered. The failure so to discover flukes affords, of course, only negative evidence.

Abstract of the Harben Lectures. Delivered before the Royal Institute of Public Health, London, in the Lecture Theatre of King's College, in October, 1903, by Ferdinand Hueppe, M.D., Professor of Hygiene in the German University of Prague.

No. 1. General Views on the Etiology of Infectious Diseases.—Oct. 8th.

The lecturer began by referring to the fact that both scientific researches and practical measures in modern hygiene were influenced and determined by their knowledge or conception of the mode of origin of diseases. A want of agreement existed as to what constituted the cause. On the one hand, as in tuberculosis and leprosy, the individual constitution played a considerable part; on the other hand, external causes might operate chiefly in such diseases as cholera and plague. The study of the latter class of diseases led to an exaggeration of the importance of external causes alone as against the constitutional causes, for in both groups of disease specific disease-producing germs were found. The work of Pasteur and Koch led many to hold the germ as the sole cause, in opposition to the teaching of Goodsir and Virchow, who claimed that the diseased cell constituted the disease entity. A third view was that associated with the names of Simon, Parkes, and others in England, and Pettenkofer in Germany, this view being that other external conditions, defined as "predisposition of place and time," played a very considerable part, this being notably the case in typhoid fever. He (Prof. Hueppe) had tried since 1888 to lead others to recognise the importance of all the three views above described, the one or the other of which had been held too exclusively. They all knew of persons who escaped a disease to which they might be exposed whilst others were attacked. This common observation led to the conception of "predisposition" in disease, a factor which had been denied by Koch and others. There was now a greater inclination to accept "predisposition"—it was a fact which must be reckoned with to-day. He (the lecturer) did not consider predisposition as something negative as opposed to the (positive) immunity which might be acquired after an attack of a disease. He considered predisposition as positive as immunity to which it was correlated. Chemical methods had not led them to an understanding of the constitution of the protoplasmic molecule, they had had to resort to biological methods "through impulses which correspond to the atomic groups of the protoplasm." He referred to such an impulse as a stimulus, and this stimulus could only be exerted if, let us say, the germ from which it emanated possessed side groups such as were found in enzymes. He regarded this as the meaning of the specificity of disease-producing bacteria acting as stimuli. In normal physiological assimilatory stimuli they had, so to speak, to deal with a good key, whilst pathogenic bacteria might be compared to a false key fitting into, and possibly destroying, the lock which represented, figuratively speaking, the cell protoplasm of the animal body. This conception also applied to the processes of immunisation. Immunisation proved the existence of predisposition, increasing as it did the faculties which pre-exist as predisposition. They knew in the case of man that predisposition might alter according to age and that it might be affected by such external conditions as cold, heat, by hunger, alcoholism, &c., which might render an individual susceptible who might otherwise have resisted the inroads of a disease. Other diseases might also lower resistance. He (Prof. Hueppe) believed that the descendants of mixed races

might show an altered predisposition, citing in support of his opinion the observations made in Italy by Kruse with regard to the distribution of cancer; in southern Italy they had a relatively pure Ligurian population, in northern Italy a mixed population of Germans, Ligurians, and Turanians, with cancer prevailing in the north. The opinion that disease germs were the only cause, the "specific entity" of the disease, was a dogma which could not be accepted for the reason that they might at times be harboured by healthy individuals without producing disease, as had been proved for the germs of diphtheria, pneumonia, tuberculosis, and cholera. These germs might live outside the body, as saprophytes, and were consequently not compelled to lead a parasitic life. What was more, their disease-producing power might vary and they did not affect different animals alike. Different germs might produce similar effects. Different individuals of the same species behaved differently to infection. These facts did not permit of their recognising either the disease germ or the diseased body cells as an entity in the process. The cellular pathologist made a mistake in only considering the structure of the animal mechanism, the bacteriologist also fell into error by concluding that his laboratory infection experiments with pure cultures were equivalent to what took place in naturally acquired infection. In proof of the last statement they had only to cite the instance of the guinea-pig which was highly susceptible to laboratory infection with tubercle bacilli but was practically never infected naturally.

In diseases which were conveyed by air, water, and food they might in certain instances succeed in avoiding infection by these means, but there remained the "genius epidemicus" of Sydenham, that was the fact that certain infectious diseases did vary in different epidemics with regard to extent and intensity, a variation which was attributable to the influence of environment as a stimulus in the Darwinian sense. They knew that the pathogenic power of a germ might become modified so that it behaved like a harmless saprophyte when introduced into the body. He (Professor Hueppe) accepted this as evidence in favour of the origin of all infectious diseases being phylogenetically traceable to putrefactive processes. According to the degree of adaptation to parasitism he distinguished germs which were facultative parasites, facultative saprophytes, and obligatory parasites. Disease he regarded as a function of three changeable factors—viz., predisposition, stimulus, and condition, each of which might vary from 0 to infinity. He represented this by an equation such as follows, in which I stood for illness, P for predisposition, S for stimulus, and C for condition, thus $I = f(P, S, C)$. If the factor C was constant or negligible it might be dropped from the formula. Each of the factors might be composed in turn of factors; thus P could be due to p (inherited predisposition) and p' (acquired predisposition) in which case they had $I = f(p + p', S, C)$. The factors could be examined separately; thus the relation between P and the quantity of pathogenic germs introduced was studied by Ammon and a curve was plotted according to Gauss. The different factors concerned in disease would have to be studied by many different means. The object of hygiene would be to decrease their predisposition and to increase their resisting power against disease.

Professor Hueppe concluded with the words: "Practice alone brings us into a groove from which there is no outlet, but practice combined with scientific research guarantees progress in public health."

No. 2. Hygiene and Serum Researches.—Oct. 12th.

In the previous lecture it was stated that specific pathogenic germs only represented a specific stimulus, other factors, notably predisposition, being concerned in disease. In the earlier work on disease Metchnikoff's phagocyte theory was hailed by pathologists, but viewed in the light of this theory as then expressed predisposition constituted something entirely negative, an inability of the phagocytes to cope with the invading germs. Metchnikoff referred an important function to the cells, whereas others inclined to the so-called humoral theory according to which the presence of bactericidal substances in the body fluids constituted the means of defence. The divergent views were united by subsequent researches which showed that bactericidal substances were produced in cells. It was shown that cell-free blood could destroy germs, that this power could be increased in specific immunisation. There were two groups of disease in which, on the one hand, as in cholera and typhoid fever, the acquisition of immunity was shown by the presence in the blood of specific bactericidal substances; on the other hand, as in tetanus and diphtheria, the growth of immunity led to the formation of substances in the blood which were capable of destroying the poisons which were given off by the specific germs. A condition might, however, exist in acquired or inherited immunity where both bactericidal and antitoxic substances appeared in the blood. By separating the germ from its toxin they were able to obtain either antimicrobic or antitoxic substances in the blood during the process of immunisation. Antitoxins, as they knew, were used therapeutically, they cured but they did not immunise; in fact they cured because they did not immunise. Habituation or tolerance to a poison did not depend on antitoxins, according to the lecturer, for antitoxin formation was only accessory to toxin-immunity. Toxin-immunity depended upon toxin serving as a stimulus to susceptible cell protoplasm. The lecturer agreed with the main conception of Ehrlich's theory regarding the mode of interaction of toxin and cell protoplasm through haptophors and receptors, etc. The following passages contain his main views. He considered natural resistance, artificial habituation, and susceptibility to toxins to be correlated and that a similar correlation existed in immunity due to bactericidal substances. Professor Hueppe explained the familiar views of Ehrlish, Bordet, Pfeiffer, and others with regard to the mode of action of bactericidal sera. Already in 1895 he wrote: "The property of a specificity may not unreasonably be conceived of as a quantitative variation and as dependent upon the bringing into action of normal powers by appropriate stimuli." This conception had since been accepted by Ehrlich and others. Immunisation was only the augmentation of faculties which were performed as disposition. Predisposition was something positive but it did not suffice to protect the body against infection.

No. 3. Tuberculosis.—Oct. 13th.

Whereas tuberculosis was formerly considered to be a constitutional disease by the majority of physicians the belief that it was an infectious disease grew and culminated in the discovery of the tubercle bacillus by Koch in 1881. Sanatorium treatment, begun by Brehmer, demonstrated the curability of the disease by raising the resistance of the individual affected. Consequently they had the specific bacillus and predisposition to deal with as factors in the causation of the disease. The erroneous view of some bacteriologists who ignored predisposition was based on laboratory experiments where large numbers of bacilli were introduced into the body, this in a manner which never took place in natural infection. That tuberculosis was frequently cured was shown by the records of necropsies. Virulent bacilli had been found in the air passages of healthy persons who had associated with the tuberculous. Tuberculosis was so general that every individual had an opportunity of becoming infected; the majority, however, remained

healthy. Formerly the tubercle bacillus was regarded as an obligatory parasite, a view which had had to be modified since its successful cultivation upon glycerinated media, especially at temperatures beneath that of the body. The bacillus might become attenuated in cultures and it showed variations in virulence in the animal body. Professor Hueppe opposed the famous dictum of Koch with regard to the intercommunicability of bovine and human tuberculosis, on the grounds that different races of cattle had been found to possess different predispositions to infection and that numerous investigators had succeeded in infecting cattle with bacilli of human origin. Behring found human tubercle bacilli which did not at first infect cattle to be capable of doing so after passage through the goat. Anthropoid apes had been infected with human and bovine bacilli, as had also human beings. Cattle had been rendered immune to bovine tuberculosis by treatment with bacilli of human origin. Human and bovine bacilli must therefore be regarded as but varieties of one species of micro-organism. These varieties might show morphological differences and necessarily, in consequence of adaptation, they would show differences of virulence when obtained from the bodies of different species of animals. Similar observations had been made with regard to other bacteria—viz., the bacteria of septicæmia hæmorrhagica and the streptococci. Bacilli of avian origin had also been modified and they were forced to conclude that these also were but varieties of the mammalian bacillus. Opinion with regard to the mode of infection had undergone a change since Koch claimed that pulmonary tuberculosis indicated that the port of entry for the bacillus was through the respiratory passages. Several observers, including Professor Hueppe, had shown that pulmonary infection might also follow when the bacilli entered the lungs through the lymphatic and blood circulation, and Grawitz had pointed out the possibility of infection through the tonsils. Experiments made in Professor Hueppe's laboratory showed that if rabbits were fed with tuberculous material some developed intestinal and others pulmonary tuberculosis. Baumgarten produced pulmonary tuberculosis in rabbits through inoculations into the bladder, and bacilli might be carried to the bronchial glands and lungs from the submaxillary glands. A special susceptibility of certain organs appeared to determine which organs should be affected. This was an entirely different view from that originally advanced by Koch. According to Professor Hueppe the *locus minoris resistentiæ* was to to found in the lungs in the adult and in the intestine in childhood. That a specific inherited predisposition existed was indicated by the fact that in certain families the children became tuberculous in succession on attaining a certain age. In some cases the parts attacked were often the same in the different members of a family. The fight against the bacilli alone would not suffice as a practical measure of prevention; they must also resort to hygienic measures which would increase the powers of resistance against infection. It was too early to form a judgment regarding the value of immunisation experiments against tuberculosis such as had been conducted by Macfadyen and Von Behring.—*The Lancet.*

The Council of the Smithfield Club last week passed a resolution to the effect "that no animal be allowed to be exhibited a second time at the club's show." In proposing this, Mr. J. D. Fletcher said it would make the show more interesting to have a collection of fresh animals each year, and it might do something to modify extravagant feeding.

At the annual meeting on 6th inst. of the South Australian Land Mortgage and Agency Company, the Chairman mentioned that owing to the severity of the drought 32,490 of their sheep had perished.

Extract from Report of the Civil Veterinary Department in India for the official year 1902 03.

Horse-Breeding.

There were 346 horse stallions on the strength of the Register at the beginning of the year. 43 were added and 40 removed from the strength; leaving a balance of 349 on the 31st March, 1903. Of the 43 received by importation from England and purchase in India, my remarks will be found recorded under paragraphs 8 to 13 of this Report. Of the 40 removed from the Register, 32 died, were destroyed or sold, and the remaining 8 were transferred to the Army Remount Department to meet the requirements of stallion power for the mares of the Jhelum Canal Colony.

The strength of pony stallions in the Bombay Presidency stood at 18; the same as last year.

Of the 349 stallions remaining at the end of the year, 168 were up to 10 years of age, 148 over 10 years and up to 15 years, and 33 over 15 years old.

The number of horse stallions actually employed at stud work during the year was 272·32 against 280·27 in the previous year. The remainder were either unacclimatized or ineffective from sickness or other causes.

The general average cost of feed and keep of stallions was slightly in excess of the figures of the previous year; being Rs. 348-15-0 against Rs. 339-12-8 in the year 1901-02. This small increase of about Rs. 9 per stallion in the year, may be accepted as satisfactory when it is considered that great scarcity prevailed in some of the horse-breeding centres.

The number and classes of stallions received either by importation from England or purchased in India, is detailed below:—

From England	Thoroughbred English		10
Imported by Messrs. Krcrouse, Madden, and Mackinnon.	Thoroughbred Australians		8
Purchased in India.	„ „	1	
	Arabs (including 3 purchased for horse-breeding in Bombay Presidency) ...	24	
		—	25
	Total		43

The average prices paid for horses purchased in India, were:—

For Thoroughbred Australians imported by Messrs. Krcrouse, Madden, and Mackinnon, £350 or	Rs.5239
For Thoroughbred Australians purchased in India	2500
For Arabs purchased in India ...	2605

The average cost of the 10 Thoroughbred English stallions imported from England, amounts to £311 10s. each. This, however, represents the actual price paid and does not include transit and other incidental charges.

Thoroughbred English.—As shown above, 10 were imported from England during the season. These were carefully inspected by me and, with the exception of "Glazier" and "Maddington," I considered the remainder good and suitable for the country. In my opinion "Glazier" is a light limbed horse, high on the leg and a bad mover. "Maddington" is knock-kneed and a bad mover.

Thoroughbred Australians..—In compliance with the orders of the Government of India, contained in Military Department letter No. 4558-D., dated 21st August, 1902, the purchase of Australian and Arab stallions was this year, for the first time, conducted by a Committee of Officers appointed by the Government of India.

The Committee appointed to purchase Australian stallions was composed of the following officers :—

Colonel H. Goad (*President*) ; Lieut -Col. J. Temple, Vet.-Lieut.-Colonel J. W. A. Morgan, Vet.-Major W. D. Gunn.

The Committee purchased all the eight Thoroughbred Australian stallions imported by Messrs. Krcrouse, Madden, and Mackinnon, and considered the horses admirably adapted for the purpose for which they were required ; they also recorded the following opinion :—

"That as long as Messrs. Krcrouse, Madden, and Mackinnon fill the order as they are now doing, no commission for Australian stallions be given elsewhere. Any such action would tend to increase the price which would have to be paid by creating competition, and would serve no useful purpose, as long as Government are provided with horses up to the present standard."

Arabs.—The Committee appointed for the purchase of Arab stallions in Bombay, was composed of—

Colonel S. B. Beatson, C.B. (*President*) ; Colonel H. Goad, Vet.-Lieut.-Colonel J. W. A. Morgan.

The remarks recorded by the Committee, are as follows :—

"The number of Arabs imported during the season was slightly in excess of former years, but the standard remained practically the same. Of the 29 horses required, the Committee, after considerable trouble, was only able to purchase 21 ; these, however, were of the type required and should prove suitable for getting remounts."

The reported foalings show a satisfactory increase ; the numbers being 3,873 against 3,391 in the previous year. The average number of foals produced per stallion employed, has also risen from 11·65 in 1901-02 to 13·83 in the year under report.

I would repeat the remarks made in last year's Administration Report, that no reliance can be placed on the produce Returns. Various methods of obtaining accurate statistics under this head, have been tried, but I am convinced that the figures rendered are as unreliable as they have always been. Our District Establishment who furnish this information, is so insufficient that it is not possible for one man posted to a district consisting of several hundred square miles, to travel and personally ascertain the results of each mare covered.

Mule-Breeding.

At the beginning of the year under report, there were 478 donkey stallions on the Register, 39 were added, by importation and purchase, and 25 were removed from the strength, leaving a balance, on the last day of the year, of 492. Of this latter number, 285 were up to 10 years of age, 160 over 10 and up to 15 years, and the remaining 47 were over 15 years old.

The number of donkey stallions actually employed during the year, at stud, was 423 against 411 in 1901-02 ; of these, 36 and 32 respectively, were used solely for donkey-breeding purposes.

During the year under report, 1 Italian and 22 Cyprian donkey stallions were sent to India by Lord Arthur Cecil. 12 American donkeys were purchased for this Department by Major C. Gough of the Army Remount Department. One Chinese donkey was received ; and 3 mature Punjabi donkey stallions were purchased by me in India.

These donkey stallions were carefully inspected by me, and my remarks on each consignment are as follows :—

Italian and Cyprian.—As a batch, distinctly good ; very level and straight legged. They are inclined to be small, but otherwise suitable for the work.

American donkeys.—They are, without exception, the best batch I have ever seen imported into India, and reflect the greatest credit on the care and judgment exercised by the purchasing Officer (Major C. Gough) in their selection. The best of this batch was transferred to the Hissar Farm to be utilised in the donkey-breeding scheme which has been established there.

Chinese Donkey.—This donkey was fair ; rather light in bone and too high on the leg.

Punjabi.—These were purchased by me at the Rawalpindi Fair and bred by zemindars in the district. They were powerful, straight backed animals, and in every way superior to the Italians and Cyprians imported during the year. The following average measurements speak for themselves :—Age, 3½ years ; height, 12-2 ; girth, 55⅛ in. ; shank 6¼ inches.

Horse Fairs and Shows.

In the United Provinces, six fairs and shows were held against five in the previous year. The number of animals competing was 1,793 against 1,509 ; and the number of remounts bought by the Army Remount Department and Native Cavalry Regiments was 237 against 266. A very satisfactory increase in the number of mules purchased is shown, 32 having been secured against only one last year.

Bacteriological Laboratory.

During the year under report, the Imperial Bacteriologist has carried out a series of exhaustive experiments with regard to the immunity conferred by rinderpest bile. The results, so far, tend to prove that at present we are unable to apply the method in any practical form in this country.

Further experiments have been continued with a view of determining the best and quickest method of producing a serum which shall possess a high protective value. This is a matter of the utmost importance and no effort will be spared to improve upon our present system.

The experiments with regard to the various samples of sera deposited at Meerut, Quetta and Muktesar, are interesting and show that to prevent deterioration it will be necessary to adopt measures to keep the temperature as near 85° Fahr. as possible. The experimental pits which were established at Lahore and Nagpur (two of the hottest places in India) recorded a maximum temperature of 90° and 84·5° Fahr., respectively. I therefore anticipate no difficulty in being able to establish depôts, at a trifling cost, in any part of India where the serum will retain its full protective power.

Cattle from the districts of Lucknow, Jalaun, Meerut and Moradabad were experimented upon with a view of ascertaining the correct dose of serum required for these breeds. The results were satisfactory and proved that the standard dose issued from the laboratory confers immunity on the breeds of cattle of those districts.

Experiments were carried out at Muktesar and Bareilly by the Imperial Bacteriologist on the following diseases, full details of which are given in his annual report :—Rinderpest, anthrax, barbone or hæmorrhagic septicæmia, hæmoglobinuria or redwater in cattle and buffaloes, surra, dourine, tubercle.

The total amount of rinderpest serum prepared and issued was as follows :

Prepared	473,471	c.c.	392,246	c.c.	last year.
Issued	553,649	„	354,591	„	„
Anthrax serum—					
Prepared	14,005	„	11,891	„	„
Issued	20,379	„	5,117	„	„

In addition to the above, 608 doses of mallein were issued to the various Superintendents against 107 last year.

The course instituted in 1901 for training veterinary assistants in inoculation and bile therapeutics at Muktesar and Bareilly has worked well, and 107 have been trained from all parts of India against 55 last year.

The Bareilly Branch Depôt.—As anticipated in last year's report, the main laboratory building and other out-

houses were ready for occupation during the past cold weather. The Imperial Bacteriologist, with the necessary staff, proceeded to Bareilly on the 17th November, leaving the Assistant Bacteriologist to carry on the work of serum preparation at Muktesar.

The advantages of a small depôt in the plains have been fully demonstrated by the season's work, as the following subjects were under investigation:

(*a*) Serum testing experiments on the different breeds of cattle.
(*b*) Hæmoglobinuria or Texas fever, which appeared spontaneously in the cattle under observation.
(*c*) Surra in camels, obtained from Bikaner and Ajmer.
(*d*) Dourine in Arabs, English, and Country-bred horses and mares.
(*e*) Hæmorrhagic septicæmia in donkeys.

Equine Diseases.

The following table shows the number of cases of glanders and farcy dealt with the various superintendents, and is a satisfactory decrease against 196 reported last year. With the exception of Calcutta, where the disease is prevalent, the rest of the country may be considered exceptionally free.

The outbreak which occurred in Kashmir was promptly suppressed and satisfactory arrangements made in conjunction with the Durbar that in future, all animals, either leaving or entering Kashmir territory, are to be carefully inspected.

Table showing cases of Glanders and Farcy dealt with by the Superintendents, Civil Veterinary Department, during 1902-03.

United Provinces	2
Punjab	1
Baluchistan and Sind	1
Bombay	9
Bengal	66
Kashmir	21
Total	100

A valuable and interesting note by Veterinary-Major Pease and Veterinary-Captain A. Smith on "Dourine" was submitted during the year. Doubts have been expressed as to the existence of this disease in India, but the careful investigations of the above officers, corroborated by the Imperial Bacteriologist, prove without a doubt that it exists to a great extent in the horse-breeding tracts of India and is a serious menace to the industry.

It was found necessary to destroy 16 Government horse and donkey stallions found to be suffering from the disease, and the necessary measures for its suppression have been adopted.

A slight increase is noticeable in the number of horse boxes and cattle trucks inspected, viz., 588 against 454 last year. These inspections have been productive of much good, as they have caused the Railway Authorities to adopt systematic measures for the cleansing and disinfecting of all vehicles which carry animals.

Veterinary Instruction.—Veterinary Colleges and Schools.

Table XXV (Provincial) shows the results of the working of the several Veterinary Colleges and Schools. The total number of students passed out was 101 against 95 last year; of these, 6 were veterinary graduates from the Bombay Veterinary College, 8 from Bengal and 18 veterinary assistants from the Punjab. All the above have gone through a course of three years' study. The Bombay Veterinary College also passed out 48, Salutris and Rajputana 21. These men have only gone through a course of two years' study.

The question of amalgamating the Punjab and Ajmer Veterinary Colleges is now under consideration, as a two years' course is not deemed sufficient. By carrying out this measure, uniformity will be established throughout all Veterinary Colleges in India.

Madras Veterinary College.—Arrangements for the establishment of a Veterinary College in the Madras Presidency have been completed during the year. A site has been selected in a suitable locality near the town, the teaching staff engaged, and it is to be hoped that the Institution will be in full working order before the end of October next.

It is very satisfactory to note that three is a great demand for the services of veterinary graduates and veterinary assistants, and that good men find no difficulty in obtaining suitable appointments. This is not the case with men who have undergone the shorter course of two years, and a great many of them remain unemployed.

General.

Under instructions from His Majesty's Secretary of State, Mr. Stockman was permitted on the 20th December, 1902, to accept an appointment under the Transvaal Government; otherwise there have been no changes in the *personnel* of the Department.

J. W. A. Morgan, *Vety.-Lt.-Colonel,*
Inspector-General, Civil Veterinary Department.
Simla, *The 14th September, 1903.*

DISEASES OF ANIMALS ACTS 1894 & 1896.

Summary of Returns, Week Ending November 7, 1903.

Period.	Anthrax.		Foot-and-Mouth Disease.		Glanders (including Farcy)		Rabies. Cases Confirmed.		Swine Fever.	
	Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Out-breaks	Ani-mals.	Dogs.	Other	Out-breaks.	Slaugh-tered *
Week ended October 31, 1903 ..	11	12	..	..	17	38	..	..	28	193
Corresponding week in 1902 ..	13	16	..	..	19	33	..	..	32	212
Corresponding week in 1901 ..	13	18	..	..	26	40	..	..	40	177
Corresponding week in 1900 ..	15	19	..	..	24	40	..	1	22	180
Total for 45 weeks, 1903	648	966	..	..	1291	2202	..	..	1298	6855
Corresponding period in 1902 ..	579	908	1	120	1013	1820	12	11	1478	7111
Corresponding period in 1901 ..	533	774	12	669	1203	2077	1	1	2961	14360
Corresponding period in 1900 ..	478	812	17	227	990	1625	6	3	1707	16043

Note.—The figures for the Current Year are approximate only.
Board of Agriculture and Fisheries, Nov. 10th, 1903.

* As Diseased or Exposed to Infection.

ARMY ENTRANCE EXAMINATIONS.

We have received the following from the Military Education Division of the War Office :—

(1) The Advisory Board on Military Education and Training, appointed by the Secretary of State for War in April last, have during the last few months held numerous meetings for the discussion of the principles upon which the allocation of commissions should be made, and of the detailed arrangements under which these principles may be applied.

(2) Full notice will be given as to these arrangements as early as possible ; but meanwhile it may be well to state some of the conclusions at which the Advisory Board have arrived, and which now carry the approval of the Secretary of State.

Selection of Candidates.—Qualifying Certificates.

(3) With regard to the selection of the candidates for commissions through Sandhurst and Woolwich, as distinct from Militia, Yeomanry, and University candidates, it is proposed to subject them to a twofold test consisting of a preliminary qualification and a competitive examination. The object of this is to secure for all candidates a fair standard of general education, while deferring, as far as possible, the special preparation which tends to separate Army candidates from other boys during their school career, and to render them less fitted for other callings if unsuccessful in the Army Examination.

(4) The Advisory Board are of opinion that it is most desirable that the qualifying test should be applied, as far as possible, not by a special examination, but by some substitute in the shape of a "Leaving Certificate,"* or such certificate as in the opinion of the Advisory Board may be accepted as qualifying for admission granted under adequate control, after the completion of an approved curriculum of education in a school of ascertained character and efficiency, to all pupils who have completed that curriculum satisfactorily, and have made good use of their opportunities at school.

(5) The effect of this would be to raise the general standard of sound education in the Army. It is hoped that such a system of leaving certificates, of guaranteed educational value, may be extended further than at present, and that the qualifying test may be satisfied in this way. The special examination would then be applicable only for those who, for some satisfactory reason, have not had the opportunity of obtaining a leaving certificate.

(6) The Advisory Board are of opinion that the subjects covered by the qualifying certificate must include : 1. English. 2. History and geography. 3. Mathematics (elementary). 4. French or German. 5. Either —(*a*) Latin or Greek, or (*b*) Science.

(* "Science" in a leaving certificate shall mean such combination of experimental or natural sciences as the Advisory Board may approve. Provided always that the sciences recognised shall have been taught in a sufficiently extended course, say, three years, involving a sufficient amount of laboratory or field work).—*The Times.*

Veterinary Surgeons and Jury Service.

We publish elsewhere the report of an Irish case in which a veterinary surgeon was held entitled to exemption from service on a jury on the ground that he is a "medical practitioner," and as such entitled to be excused. So far as we are aware this is the first time any Court in the United Kingdom has so extended the definition of medical practitioner. But it is to be observed that in giving their decision the Irish King's Bench Division had to interpret the exemption clause in the Irish Juries Act of 1876, which differs in certain essential particulars from the English Juries Act of 1870. According to the law applicable to England and Wales the following persons (*inter alios*) are excused from service on juries : English Members and Licentiates of the Royal College of Physicians, London, if actually practising as physicians ; Members of the Royal College of Surgeons in London, Edinburgh, and Dublin, if actually practising as surgeons ; apothecaries certificated by the Court of Examiners of the Apothecaries' Company, and all registered medical practitioners and all registered dentists (if they so desire), and registered pharmaceutical chemists if actually practising as apothecaries, medical practitioners, or pharmaceutical chemists respectively." To put it generally, the English Act grants exemption to registered medical practitioners in actual practice. In Ireland, however, exemption is accorded to "licensed medical practitioners actually practising." No such person as a "licensed medical practitioner" is known on this side of the Channel ; and, if the Irish judges think fit to include a veterinary surgeon in the term, their judgment is no precedent to be acknowledged in any English Court. It is interesting to observe that by the 6 Geo. IV., c. 22, s. XI, exemption in Scotland is granted to "all physicians and surgeons duly qualified and actually practising as such."—*B.M.J.*

Mr. Geo. Thatcher (Solicitor to the Royal College of Veterinary Surgeons, London) writes : My attention has been called to a paragraph in *The British Medical Journal* of October 17th as to the status of a veterinary surgeon and his right to exemption from service on juries, and I would venture to traverse your dictum that a veterinary surgeon is not a medical practitioner. Your quotation from the Juries Act for England is practically correct, and the clause in the Irish Juries Act is similar, except that the words there are "licensed medical practitioners," instead of "registered medical practitioners," as in the English Act. In Ireland it has been decided in the case *re* Allen, 37, *Irish Law Times*, C.C.R. 154, that a veterinary surgeon is a licensed medical practitioner, and consequently exempt from service on juries.

Veterinary surgeons first obtained any rights under their charter of 1844, which recognised the art and practice of veterinary surgery and medicine as a profession. The Juries Act was passed in 1870, and at that time there was no recognised register of veterinary surgeons in existence. By a Supplemental Charter of 1876 a Register of Veterinary Surgeons was established, and by the Veterinary Surgeons Act, 1881, only persons on this Register or holding a veterinary certificate of the Highland Society were entitled to call themselves veterinary surgeons. The Act of 1881, Section II, defines veterinary surgery as the art and science of veterinary surgery and medicine, and it seems to follow that a person who practices medicine must necessarily be a medical practitioner, and, being on a register recognised by law, seems to come within the definition of a registered medical practitioner. At all events, that is the contention ; and a case will shortly be brought before the Divisional Court in this country for the determination of the question.

It must be remembered that the qualifications of a veterinary surgeon are very different to what they were even when the Act was passed ; a student must produce a certificate showing that he has passed a test in general education which is almost precisely the same as that required by the General Medical Council for their students ; he must pass four severe professional examinations, and study at some recognised school for four years. I enclose you a syllabus, from which you will be able to judge of the quality and severity of the examinations and course of study, and I beg you to refrain from any further adverse comment until after the case I have mentioned has been disposed of. Trusting to your fairness and courtesy to insert this explanation after your comment.—*B.M.J.*

ARMY VETERINARY DEPARTMENT.

Extract from *London Gazette*,
WAR OFFICE, PALL MALL, Nov. 10.

The undermentioned Lieutenants to be Captains :—A. C. Wilson, W. S. Anthony, H. M. Lenox-Conyngham, F. H. Shore, W. A. Pallin, P. J. Harris, W. A. Wood, D. Bolton, R. C. Moore, J. A. B. McGowan, E. B. Bartlett, R. C. Cochrane (on Seconded List), J. B. Southey, A. G. Todd, H. M. Durrant, G. Conder, A. J. Williams, J. J. Griffith.

OBITUARY.

JAMES GEORGE PHILIPS, M.R.C.V.S., Staff Veterinary Surgeon (retired). Graduated, Lond : Dec., 1835.

Mr. Philips died at Bournemouth, on Tuesday, Oct. 13th. He was born on the 17th October, 1815 ; entered the Army on 28th August, 1838 ; promoted V.S. 1st Class 1st July, 1859. He served as V.S. in 14th Light Dragoons, 7th and 10th Hussars, and Cavalry Depôt, Maidstone. Was promoted Staff Veterinary Surgeon 4th Nov., 1857 : retired from the Army 26th Aug. 1868.

NEIL M'KECHNIE BARRON, M.R.C.V.S., Hooton, Chester. Graduated, Edin : July, 1873.

Mr. Barron died on Monday, Nov. 2nd, aged 62 years. The remains were conveyed from his residence, Roslyn, Childer Thornton, to Eastham Church for interment on Thursday. The deceased gentleman was well-known and very popular, having been chairman of the Parish Council of Childer Thornton for some years. He was superintending and senior elder of Little Sutton Presbyterian Church. He founded and carried on at his own expense the mission at Childer Thornton, purchasing the old drill hall and the Royal Hotel for that purpose, and foregoing the license of the last-named property. He was also superintendent of the Band of Hope, and of the sunday schools, and President of the Sutton and Hooton Temperance Society. He was well known and highly respected for his charity and philanthropy, his help being always ready wherever it was needed in the directions indicated. Professionally he was veterinary inspector for Wirral Division of Chester county. His general veterinary practice, which dates from about thirty years ago, will be carried on by his son, Mr. W. Knight Barron, M.R.C.V.S. His brother, Mr. Alex. Barron, will be remembered in Liverpool as Professor of Pathology at the Liverpool University. The chief mourners were : Messrs. R. Barron and W. K. Barron (sons), R. Barron, Aberdeen ; Mrs. Selkirk and Mrs. Shone (daughters) ; J. Selkirk, and W. P. Shone, (sons-in-law), A. Storrar and A. Jack (nephews), Mrs. Storrar, Mrs. Henderson (niece), Stephen Ward, Rev. H. J. Craig, Dr. J. Welsh, Messrs. Gomer, Caldwell, Newton, Price, Hutton, and J. M'Kenna. Amongst those assembled at the graveside were representatives of the Parish Council of Childer Thornton, of Bromborough Urban District Council, and Wirral Rural District Council. A large number of floral tributes were sent.—*Liverpool Post.*

CORRESPONDENCE.

"MILK FEVER."

Sir,

In your valuable journal of September 19th a veterinary surgeon in giving a successful record of milk fever treatment according to Schmidt, asked other practitioners to answer a few questions as to their results, especially if any had been unsuccessful. He had personally treated 88 cases of which 75 recovered. I have noticed in all your reports that the treatment (Schmidt) has always been highly successful, and I have not yet seen one to the contrary. If anyone had tried and found it "wanting" I hoped he would report according to invitation as I think we frequently learn much more from "failure reports" than from the successful ones. I have waited in vain, so possibly I am the only one taking your journal who has found this treatment a failure. I regret to say that, owing to being compelled to adopt this method owing to the very extensive "puffing" and description it has received in the Farmers' and lay press, I am rarely now consulted for a milk fever patient, as my treatment of past cases has always resulted in a blank failure. Most of my clients now treat them with salts, treacle, and whiskey, and if necessary then call in the butcher. I may add that two of my neighbouring practitioners have also discontinued this method as it has been equally unsuccessful with them, and I am often hearing of unsuccessful results from owners residing out of my district, whose veterinary attendants have tried Schmidt treatment. The first question asked is—How many cases had you in the last 12 months? I cannot say exactly but should say about 30.

How many of these recovered?—When I first adopted this treatment I had five complete recoveries out of my first 12 cases ; that will be two or three years ago. Since then I have not had one complete recovery. I have had about one-third of my cases recover consciousness, but every one of these has been affected with "paralysis" as a sequel, and not one of them has yielded to treatment. Most of these paralytics died, were shot, or otherwise destroyed from the 10th to the 21st day, as no progress was made under treatment. The treatment for the paralysis consisted of spinal stimulants, including sheep skin, embrocations, vesicants, and electricity. Internally Pot. Iodi., Hydrarg. biniod., Arsenic, Nux Vomica, Ferri Sulphas, Strychnine, and vegetable tonics and diuretics were tried. Several of these cases yielded to treatment so far as resuming their natural functions such as appetite, "cud," milk, defæcation etc. were concerned, but none recovered complete sensation and power in their hind legs and lumbar region.

How many of the fatal cases were due to causes other than milk-fever?—Four. One acute metritis, one due to contaminated infusion, one internal hæmorrhage, injury at calving, the fourth doubtful—she recovered consciousness and got on her legs and appeared to be going on well when last seen at 7 p.m., but got down again three hours later and died in considerable pain about 2 a.m.

What treatment have you used?—I have always attended strictly to turning the patient frequently, keeping her packed on sternum, head slung, warmth to body, cold compress to head, urine withdrawn, fæces removed, and the washing and disinfection of the udder or teats before the injection. That this latter is not the cause of my failures I consider proved by the fact that I have had only one case show any change in the milk. and that case was undoubtedly due to contaminated solution at time of injection ; all other cases showed no changes in their milk—what was able to be withdrawn from them, and all the partially-recovered cases—paralysed—recovered their milk to a certain extent. Many of my first cases I trusted entirely to the above, and the simple injection, which once or twice I repeated at the 12th hour in some, and the 24th in others, leaving it in without interference with the udder as per Schmidt's instructions.

Meeting with no success I commenced to try and assist with other remedies, given hypodermically (eserine. strychnine, atropine, digitalin, caffeine, and ether), or as an electuary or a draught—aloes, salts, treacle, barium chloride, calomel, ether, whiskey, ammon. carb., ginger, etc. ; chloral, pot. bromid., pot. iodi, nux vomica, digitalis, caffein, decoction of coffee. Of course I only tried drugs on one case which were physiologically compatible, and did not give chloral by mouth and inject strychnine hypodermically in the same case. I gave one cow an ounce of ether per rectum every six hours and she always cheered up for an hour

or so after each, but as the second injection of the udder proved as useless as the first, her owner shot her 12 hours later.

I have also tried stimulating applications (mustard, embrocations, sheep-skin, etc.) to the loins and occasionally to the whole length of the spinal column. The solutions I used for injections were made with tap water (rather hard), rain water, or pure distilled water; in every case freshly boiled and filtered just before use, and injected at 80° to 100° F.; the solution each time was one quart in quantity and mostly contained pot. iodi. 2 drachms (occasionally three drachms), and twice I used three 15 grain tabloids of chinosol. My first few cases were injected with a funnel, tube and syphon, but lately I have used an enema injector, with the air-filter to follow. I have followed the injection with injection of air about half-adozen times, but results have been equally disappointing. I have not tried air alone yet, but shall do so on my next victim. I have been very energetic with massaging the udder on several occasions, but getting no result for my labour I have in many other cases been rather neglectful of this.

Did you have any cases of troublesome mammitis following this treatment?—Except the one previously mentioned (non-contamination of the solution, and she died from general septicæmia on the 5th day) not one.

Do you consider the advantage of the Schmidt treatment over the older methods great?—If all the successes reported are anything like correct I think great honour and *kudos* are indeed due to Schmidt, but speaking for myself, and as far as I can hear of others just around my district, it has proved a decided failure. The majority of my cases have been shorthorns in plethoric condition, in the spring or early summer. A few have been quite low in condition. I hope if there are any other practitioners who have been disappointed with the results of this treatment that they will accept Mr. Saunders' invitation (*The Veterinary Record*, Sept. 19, 1903) and report forthwith. LINCS.

A SOUTH AFRICAN SOLON.

Sir,

Enclosed please find an effusion from the local paper. Is'nt it a gem? Perhaps it may interest some of your readers.—Yours truly,

BEN RUNCIMAN, M.R.C.V.S.
South African Constabulary.

Bloemfontein, O.R.C., Oct. 10th.

THE CATTLE PLAGUE.

Sir,—Will you kindly allow me space in your valuable columns to give my experience of the so-called Rhodesian redwater.

I maintain that it is not redwater; further, that it did not spread from the East Coast, but originated on the road between the Transvaal and Rhodesia.

Firstly, it is not redwater but anthrax splenic fever, known among the farmers as melt ziekte. I discovered this disease in 1896 on the road between Khamastad and Bulawayo, trekking from Pretoria to Bulawayo with over 100 head of cattle. All these cattle were immune from rinderpest and redwater. It was such a drought as we are having now, and water was almost unobtainable. After travelling two days without water we came to a stagnant dam where we had to let the cattle drink, not knowing when we should find the next water. The result was that seven days after we left the dam splenic fever broke out and we lost 21 beasts—all died five days after the outbreak. I dosed the remainder with carbolic acid and linseed oil, and lost no more but came on dead animals all along the road, which no doubt died of the same malady. I am convinced that all the dams were impregnated with the bacilli of anthrax, and at the time warned all transport riders that the country would be again denuded of all stock by a disease much worse than rinderpest, viz., splenic fever. This disease, known as melt ziekte, has frequently broken out and carried off a few animals from amongst herds, but has never been looked upon as a dangerous disease until now, when it has taken an epidemic form. It is not so contagious as rinderpest or lung-sickness. It is carried by two means, by cattle trekking from one dam to another and by aasvogels or vultures.

I fully maintain that this Colony can be kept free if the following suggestions are carried out: Shoot all cattle crossing the border from the Transvaal, and all vultures appearing in the Colony, and then burn the bodies—do not bury them.

The disease is very similar to redwater, and only experienced and practical men can discern the difference between them. However, there is as much difference between the two as there is between lung sickness and rinderpest.

I am rather surprised to see my old friend Dr. Theiler believes it to be redwater, knowing his extensive knowledge in the cattle diseases of the Transvaal.

Transport riders whom I have met from Rhodesia all state that no cattle recover from the disease, which fact bears my statement out that it is splenic fever. My only object in making the foregoing statement is to help the Colony to keep away a more terrible disease than any other that has ever visited this country.—I am, etc.,
—*Bloemfontein Post.* "PRACTICAL."

THE NEW A.V.D. WARRANT.

Sir,

It is perhaps presumptuous on my part to venture to do so, but as such experts as Lt.-Col. Nunn mentions in his letter have failed to convince him of the benefits accruing to the Deputy-Director General, Army Veterinary Department, under the new warrant. I will confine myself to the facts and endeavour to make the matter clearer to him.

Under the old warrants Lt.-Col. Nunn as a Vet.-Lt.-Col. of under 30 years' service could (if he chose) retire at the end of his tenure of office as D.D.G. on £420 under the new Warrant he can retire in November, 1904 (having held the post of D.D.G. for three years) with a pension on £500, a clear gain of £80 per annum!

Lt.-Col. Nunn does not, under the new Warrant, become eligible for selection for promotion to the rank of Colonel till 1905, therefore if he, as an ordinary Lt.-Col of the A.V.D., elected to leave in 1904, £400 per annum would be his pension. As Deputy-Director-General he can go in 1904, as already mentioned, on £500, thus gaining, if he chooses, not £80 but £100 per annum!

Lt.-Col. Nunn's statement, which is corroborated by his banker, that he only benefits £45 a year in pay while serving under the new Warrant is evidence that he has hitherto been drawing pay at a higher rate than that laid down in the Royal Warrant for his rank.

"I am afraid "Truth" is very near the mark when he writes "once a Major always a Major in the A.V.D." promotion by selection to the higher ranks does not hold out much hope of advancement to the majority, but the fact that in the A.V.D. rejection by a medical board as unfit for active service is not always a disqualification for selection for administrative posts, holds out a ray of hope for some who may lose health without gaining wealth in the service of their country.

The new Warrant is undoubtedly a great advantage for the top and the bottom of the A.V.D., but I fear it will be weary work jogging on in the middle for some years to come.—Yours faithfully,

Nov. 7th. "COMMON SENSE."

P.S.—Since writing the above I have ascertained that under the old warrant a Vet.-Lieut.-Col. of less than 30 years' service only received *£400* per annum pension, not *£420*, so the improvement in the pension of the D.D.G. A.V.D. by either comparison would be £100 per annum if he elects to retire at the end of his term of office. "C. S."